**To:** Coffman, Joel[Coffman.Joel@epa.gov]; ldumas@rmcwater.com[ldumas@rmcwater.com]
**Cc:** Robin, George[Robin.George@epa.gov]; Albright, David[Albright.David@epa.gov]
**From:** Greenberg, Leslie
**Sent:** Mon 7/28/2014 10:19:21 PM
**Subject:** RE: More information on scouring potential from injection

Thanks, Joel.

Leslie Ann Greenberg

U.S. EPA, Region 9

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**From:** Coffman, Joel
**Sent:** Monday, July 28, 2014 3:07 PM
**To:** ldumas@rmcwater.com
**Cc:** Greenberg, Leslie; Robin, George; Albright, David
**Subject:** RE: More information on scouring potential from injection

Great and thanks for looking into that for me!

**Joel Coffman** *Groundwater UIC Office*

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United States Environmental Protection Agency

**From:** Leslie Dumas [mailto:LDumas@rmcwater.com]
**Sent:** Monday, July 28, 2014 2:58 PM
**To:** Coffman, Joel
**Subject:** More information on scouring potential from injection

Hi Joel

I talked a bit more with our geochemical sub who provided the following key points:

1. Aquifer materials at the proposed injection sites are sand and gravel; we're not talking about sandstone. Bedrock in the area is the siltstone of Monterey Formation.

2. The mineralogy reports that were done showed a variety of things that indicate the unlikeliness of scouring/sinkhole formation. First of all, most of the mineralogy in the Civic Center Gravels (30-40%) is quartz, followed by volcanics. Cement is predominantly montmorillonite (expansive clay).

3. The geochemical modeling that was conducted showed almost no potential for dissolution and a small potential for precipitation; therefore, it's highly unlikely that there will be aquifer matrix dissolution and collapse.

4. The geochemical modeling that was done did look at the potential for dispersion of clays (~20% of soil matrix), and showed there was no potential for clay dispersion.

Hope this extra information helps.

Leslie

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**Leslie Dumas, P.E.**

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